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COLLECTING IN SOUTHERN BRITISH COLUMBIA: HILLTOP TO LAKESHORE FOR BEETLES

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Beetle collectors are lucky. Weather permitting, they can hunt almost the year through, for many species of Coleoptera hibernate as adults. When snows are deep our treasure houses are old stumps, and dead trees with the bark still on but loose. Better yet are November days when early frosts have sent the lakeshore forms to shelter, and every driftwood log is home to a dozen species.

But best of all is a day in May. Then longhorns, buprestids, and a hundred lesser things swarm like bees around last winter's wood pile; herbs and shrubs are everywhere in flower; mountain snows are melting, and each day the rising lakes flush insects from their haunts. He is a poor collector who cannot in sunshine hours take more beetles than he is able to pin and label, working even far into the night.

Many a foray was made from "Tyn-y-Coed", for thirty years my parents' home at Salmon Arm. On a hilltop overlooking an arm of Shuswap Lake, ringed with mountains, with orchards, pasture lands, and virgin forests all nearby, it was a fine place for the general collector and this is the story of a typical day.

Except for a knife in my pocket, and a strong-handled sweeping net, my equipment fitted easily into a light haversack. A fine-mesh sieve, a hatchet, cyanide bottles, vials of 75% alcohol, dry vials for larvae and pupae, tweezers, these were enough; but I never forgot a substantial lunch!

As I headed down the road towards the lake, collecting began at once. One after another, tiger beetles rose, flew ten or fifteen feet and settled, always turning at the last instant to face me. All were *Cicindela tranquebarica borealis* E. D. H., and the hotter the day the harder they were to catch. A fiery hunter, the copper-spotted *Calosoma tepidum* LeC. searched beside the road, moving quickly on its powerful legs. My first stop was at a group of young Douglas fir trees. A few sharp taps on a green branch brought a shower of things into the waiting net. Disregarding spiders, young Cyphoderris crickets, flies and wasps, it didn't take long to pick out a series of the beautiful little weevil *Scythropus elegans* Couper, and numbers of a green and black scarab, *Dichelonyx backii* Kby., as well as occasional examples of the larger and duller *D. columbiana* R. Hopp., and one or two of a little brown derodontid, *Laricobius laticollis* Fall. Many of the needles on the branch showed where the weevils and scarabs had fed.

Down the hill and through a fence was a patch of hazel (*Corylus*), always a good place to find the chrysomelid *Syneta hamata* Horn and a placid click beetle, *Ludius pudicus* Br. On a nearby bank the bright yellow bells of tall Oregon grape (*Berberis aquifolium*) were swarming with a little gray-banded melyrid, *Listrus provincialis* Blaisd.; white cascades of cherry blossoms (*Prunus demissa* and *P. emarginata*) produced tiny brown weevils, *Euclyptus rutilus* Fall and two kinds of longhorns, the blue *Poecilobrium chalybaeum* LeC. and the delicate *Molorchus longicollis* LeC. The last could be found also in the drooping panicles of ocean spray (*Spiraea discolor*), together with sexually dimorphic *Anoplodera crassipes* LeC. and a tiny black dermestid, *Orphilus subnitidus* LeC.

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Many wild roses were defaced by the ubiquitous red and black hip weevil, *Rhynchites bicolor wickhami* Ckll. Commonest of rose cerambycids was the variably marked *Cortodera longicornis* Kby., proud owner of synonyms, with next the little brownish *Pidonia scripta* LeC. By sweeping the bushes with a net I regularly took singletons of one of our prettiest small beetles, the barrel-like blue and red *Cryptocephalus notatus* Fab., while on a blossom I found a cuneiform buprestid, *Acmaeodera vandykei* Fall, only once or twice taken in this Province.

Next to attract attention was a dead but standing birch (*Betula occidentalis*). Slitting the bark revealed a number of the graceful black *Anoplodera aspera* LeC., each in its pupal cell. In the softer wood were shiny yellow grubs like giant mealworms, the larvae of *Coelocnemis columbiana* Csy. The clumsy black adults almost stand on their heads when disturbed, and produce an odor like hydrochloric acid on galvanized iron.

On the outside of the bark grew many white polypore fungi, each of which had been hollowed out by the larvae of *Platydema oregonense* LeC. and *P. americanum* C. & B. and left stuffed with an intertwined mass of the wiry brown threads they produce. Also in cells under the bark, but always in logs on the ground, were pupae of a gray and pink pyrochroid, *Schizotus cervicalis* Newn., males of which have flabellate antennae. My prize from birch was another species with unusual antennae, the velvety black and crimson *Chariessa pilosa* Forst.

Birch stumps, unless full of ants, always repaid study. With a thrill I realized that a bump on the top of one was alive; at the movement of my eager hand there dropped into the grass, and played dead, *Eurymycter fasciatus* Oliv., a beast with a long brown and white face like an aged and sorrowful Hereford cow. Stumps called for the use of a hatchet, and produced adults and larvae of two black lucanids, their burrows often extending right down into the main roots, *Platycerus marginalis* Csy., and *Sinodendron rugosum* Mann. The male of the latter has a fine curved horn on its head and in profile looks like a rhinocerus. Less common were the stages of *Trichiotinus assimilis* Kby., a scarabaeid whose hairy adults, active and buzzy, occurred on wild roses and spiraea.

The gravelly railroad embankment was next, a place to watch for *Cicindela oregona* LeC. To the naked eye a dull species, under a microscope it is one of the most beautiful of all, as colorful as a peacock's feathers. Hunting them on sunny days was a "catch-as-catch can", but in dull weather they burrowed an inch or so into loose sand or gravel and were easily scooped out. Below the embankment I searched the fireweed (*Epilobium*) for the squat brown or black *Adoxus obscurus* Linn. Near-by small willows yielded many *Galerucella carbo* LeC. and an occasional big weevil, *Lepyrus* sp., as well as coppery flea beetles and snapping elaterids.

Through one more fence—thank goodness the railroads do not use barbed wire—and the richest collecting began. Each day the water of Shuswap Lake was inching up the shore, driving back a swarm of riparian beetles, and daily they had to find new homes. Every piece of driftwood sheltered a grand mixture of carabids, staphylinids, weevils, and nondescripts. In November and December most of the same species were found torpid under logs on the shore and could be picked over at ease, but in May they were on the run in an instant. I had to appraise at a glance, disregarding all but the best as they fled.

The bright colors of two red and blue species, often in colonies, were first to be noticed. *Paederus pugetensis* Csy. is an innocuous little staphylinid, but *Brachynus medius* Harris is a natural aerosol bomb; small though it is, our form lets fly its ammunition with an audible "pop". Other bright flashes were the velvety green *Chlaenius sericeus* Forst., the burnished *Platynus metallescens* LeC. and *subsericeus* LeC. Less common, and duller, were the related *P. fraterculus* LeC., *ruficornis* LeC. and *gemellus* LeC.; *P. anchomenoides* was rare. I

recall being galvanized by the sight of a narrow yellow and black thing scurrying into a crack: my first *Platynus nigriceps* LeC. Many other species were abundant, *Tetartopeus hebes* Csy., a dozen or so kinds of *Stenus*, one or more of *Olibrus*, and a striped billbug, *Calendra costipennis* Horn.

There was great activity in the grass at the water's edge. Here and there were predators, the little tiger-beetle-like *Elaphrus riparius* Linn. in open spaces, *Philonthus* and other staphylinids skulking out of sight. Bembidions ran everywhere, while the damp soil teemed with burrowing forms, *Dyschirius, Bledius, Trogophloeus, Heterocerus;* a splash or two of water on their homes brought them swarming out, some to flight, others to the nearest shelter. The very grasses held their quota of refugees, *Gastroidea cyanea* Melsh., *Phaedon oviformis* LeC., species of *Longitarsus, Phyllotreta, Bagous, Lixellus filiformis* LeC. and other little weevils, all flooded from their favorite weeds.

Thanks to cows and horses there was good collecting of dung beetles. The larger and slower species, *Canthon simplex* LeC., *Aphodius fimetarius* Linn., *distinctus* Mull., *pardalis* LeC., and *vittatus* Say were readily caught, but small or active forms escaped. The remedy for this was an old bucket, three-quarters full of water. Into it was put a cow pad or horse dropping of suitable age and consistency. As it sank the inhabitants came struggling to the surface, little oxyteline and aleocharine staphylinids, also *Philonthus, Tachinus* and *Tachyporus* spp., minute black ptilids, shiny *Hister* and *Saprinus*, palpicorns such as *Cercyon quisquilius* Linn. and *unipunctatus* Linn., and three species of *Sphaeridium*: *scarabaeoides* Linn., *lunulatum* Fab. and *bipustulatum* Fab.

After a siege of this and perhaps ten minutes of poking under a dead fish carefully stalked upwind, it was a pleasure to leave the shore and collect from the musky flowers of hawthorn (*Crataegus*). Here were different beetles entirely: little red-seated blue *Malachius contortus* Fall, scarlet and green *M. aeneus* Linn., the slow-moving *Ditylus quadricollis* LeC., active *Pedilus monticola* Horn, *Orsodacne atra* Ahr. in a variety of elytral markings, and many of the longhorns that occurred on roses.

In the pasture beyond, Columbia ground squirrels (*Citellus*) were calling warnings of my approach. Their burrows ramify; the nests are far underground and hard to locate but may contain an interesting fauna, to judge by the species at the mouths of the tunnels. By removing the flooring of soft earth to a depth of two inches from the entrance to as far back as my arm could reach, and carefully sifting each handful over the white cloth of my sweeping net, I filled a vial with beetles, *Aphodius phaeopterus* LeC. and its form *canadensis* Garnett, *Hister pluto* Csy., a little *Saprinus* identified as *laramiensis* Csy. by Chas. Ballou but said to be nearest *paeminosus* LeC., by H. C. Fall, and allied species. Most prized was the rare *Aphodius decipiens* Horn, a little brown Aegialia-like creature, usually covered with a layer of clay and easily missed because of its habit of feigning death; it is the shape of the thing one must watch for.

Leaving the meadow and walking north along the railroad track another favourite spot was soon reached, an old rock quarry. Sentinels spied me from afar and gave occasional notice of my progress until, as I turned the corner, there was a series of shrill whistles, then abrupt silence. Every ground hog had scurried to safety in its burrow under some tremendous rock. The entrances of their tunnels had one thing in common with those of the ground squirrels: an abundance of fleas; but the floors contained no beetles. Under stones and old boards nearby were two species of click beetles, *Ludius bombycinus* Germ. with a pattern in golden hair on reddish elytra, and the similar blackish *L. viduus* Br. The association was so constant that I suspcted their larvae of being interested in the mulch of ground hog dung, but the matter was not investigated.

Under the same and other rocks, tenebrionids sheltered. *Coniontis oblita* Csy. and *Eleodes variolosa* Blaisd. were numerous; some of the latter had small orange maggots protruding from between the elytra and abdominal apex. Many stones harbored colonies of ants. In the nests of a harmless black *Formica* were two species of inquilines, curious reddish histerids, *Hetaerius exiguus* Mann. and the common *H. tristriatus* Horn. The latter sometimes occurred also with the vicious red ants (*Formica rufa* subsp.) as did the clumsy black scarab *Cremastocheilus armatus* Walk.

After climbing above the quarry and through the trees, it paid to watch the woodland paths for *Cicindela longilabris montana* LeC., a white-marked black tiger beetle, easily caught. On each side of the trail there were dead Douglas firs, and some had white puff-ball-like fungi on the trunks. I pinched one of these, and out through a hole in the bottom popped *Glischrochilus 4-signatus canadensis* Br., G. *sanguinolentus* Oliv., and a fine big *Epuraea monogama* Cr., each covered with a yellowish dust of spores. Other fungi, large plate-like polypores, had on their soft flat undersides various small staphylinids, and such things as *Ostoma columbiana* Csy., *Calitys scabra* Thunb., *Dacne californica* Horn, the lovely orange-spotted *Mycetina idahoensis* Fall, and occasionally the bumpy *Phellopsis porcata* LeC.

Coming to a road, I was at once on the watch for oil beetles, the soft, blue-black *Meloe*. They were to be found along the edges, feeding avidly on certain weeds and grasses, the gravid females huge and unwieldy, dragging their swollen abdomens over the ground as they crawled from plant to plant. The males of these beetles have the most remarkable barbed genital organs; I cannot imagine how, once in copulation, the pairs are able to separate again.. The same applies to the melasid, *Anelastes duryi* Kby.

This same road brought me back to my father's farm, itself a fine place to collect. There were woodlands, orchards, haylands and pastures, fields of vegetables, a small stream and an excellent barnyard. One of the best places to get beetles in quantity and variety is a woodpile, logged the previous winter and freshly cut to short lengths in April or May. In 1929 there was just such a pile in a new clearing. Most of the wood was Douglas fir, mixed with some birch and a little western larch, western cedar and western white pine. May 12 was a fine hot day, so I took my lunch and spent six hours on the spot, picking and choosing the beetles I wanted.

The air over the pile hummed like a beehive; a single blind sweep of the net in any direction was sure to catch something. Most of the beetles appeared suddenly, and made a circle or two for orientation, then settled. Commonest were the species attracted by the odor of their host trees: *Alaus melanops* LeC., *Chalcophora angulicollis* LeC., *Spondylis upiformis* Mann., *Tetropium velutinus* LeC., *Asemum atrum* Esch., *Stenocorus lineatus* Oliv., *Semanotus litigiosus* Csy., *Xylotrechus undulatus* Say and *Dendroctonus pseudotsugae* Hopk. to Douglas fir; *Atimia dorsalis* LeC. and *Phloesinus punctatus* LeC. to cedar; *Platycerus marginalis* to birch; *Merium proteus* Kby. and *Dendroctonus valens* LeC. to larch, *Stenocorus lineatus* Oliv. and *Monochamus oregonensis* Csy. to pine. Almost equally numerous were the predators: *Enoclerus sphegeus* Fab., *Thanasimus undatulus* Say, *T. nigriventris* LeC., *Malachius aeneus* Linn., *Temnochila virescens chlorodia* Mann. Other species associated with wood, such as *Cucujus clavipes puniceus* Mann., *Pityophagus rufipennis* Horn, *Lecontia discicollis* LeC. and *Priacma serrata* LeC., were not uncommon.

But the puzzling feature of this woodpile horde was the abundance of three or four species of *Dichelonyx*. The adults feed on the foliage of evergreen and deciduous trees; the larva are presumably in the soil around the roots of living trees. Why should the beetles be attracted to freshly sawn but partially seasoned wood?

INFLUENCE OF OIL ON TOXICITY OF BENZENE HEXACHLORIDE*

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In 1946, a water-dispersible powder (formulation P. 530) ** containing 6% gamma benzene hexachloride and 50% goulac (lignin pitch) was tested in the field for control of black cherry aphid (*Myzus cerasi* (F.)), apple aphid (*Aphis pomi* Deg.), mealy plum aphid (*Hyalopterus arundinis* (F.)), wooly apple aphid (*Eriosoma lanigerum* (Hausm.)) and pear psylla (*Psylla pyricola* Foerst.). The material was compared at 0.25 lb. gamma isomer per 100 gal. in (1) water alone, and (2) plus 0.5 gal. of either distillate oil (42. S.S.U. Vis. 100° F., 77% U.R.) † or summer oil (60-64 S.S.U. Vis. 100° F., 78% U.R.) ‡. Three gallons of each mixture were applied by bucket pump and two trials were made, the first beginning July 10 and the second July 16. Results are given in Table 1.

Table 1

Effectiveness of Benzene Hexachloride Alone and with Oil

Insect	Trial	Alone in water		Plus oil		Check (not sprayed)	
		Counted	% Mort.	Counted	% Mort.	Counted	% Mort.
Black cherry aphid	A	500	85.8	2000	99.9	500	11.4
	B	500	97.8	500	99.8	500	0.6
Apple aphid	A	200	54.0			200	3.5
	B	300	88.3	500	98.2	1000	1.0
Mealy plum aphid	A	200	51.5	1000	98.8	500	1.8
	B	69	29.0	137	100.0	500	4.2
Woolly apple aphid	A	200	14.5	2000	99.2	500	1.4
	B	137	87.8	387	96.6	500	3.0
Pear psylla	A	100	90.0	100	98.0	115	9.6
	B	57	96.5	100	99.0	100	12.0
Average			69.5		98.8		4.8

These results indicate that the insecticidal effect of benzene hexachlorde was heightened by the simultaneous application of oil. This conclusion is supported by another trial carried out on mealy plum aphid two weeks later, in which four concentrations of gamma isomer were applied with varying concentrations of oil. Results are presented in Table 2.

Table 2

Effect of Oil on Toxicity of Benzene Hexachloride to Mealy Plum Aphid.

Gamma Isomer Per 100 Gal.	Oil per 100 Gal.	Counted	% Mortality
0.5 lb.	0.5 gal.	2000	100.0
0.25 lb.	0.5 gal.	3500	99.9
0.125 lb.	0.25 gal.	1613	99.6
0.0625 lb.	0.125 gal.	1430	97.2
0.25 lb. alone in water		1038	51.4
Checks (not sprayed)		500	1.4
		800	1.3

The effectiveness of benzine hexachloride was very markedly increased by the addition of oil. This may be a particularly important point in the control of resistant forms such as mealy plum aphid and woolly apple aphid. The addition of petroleum oil to a benzene hexachloride spray was suggested by Dr. J. Marshall. So far as known it has not been reported previously in the literature.

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** Imperial Chemical Industries, England, through Canadian Industries Ltd., Montreal, Que.

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‡ Shell Oil Co., Vernon, B.C.

COLEOPTERA NOTES II: SILPHIDAE

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This is the second of this series (1) of notes discussing certain phases of Coleopterology. The present paper again deals with the family Silphidae and is a continuation of the first. In this note two species are discussed as well as the synonymy of some species of *Nicrophorus* and notes on the family in general.

Nicrophorus particeps Fischer

Nicrophorus lunatus var. ***particeps*** Fisch., Cat. Col. Karel, p. 9, 1842.
Nicrophorus melsheimeri Arnett, Jn. N. Y. Ent. Soc., 52:5, 1944. [Not of Kirby, 1837.]

Female: General form and shape as of other members of the subgenus *Nicrophorus* s. str.; medium sized, black, marked with reddish orange; antennae with the last three segments of the club orange, first segment of the club black; front black. clypeal membrane small, orange; pronotum glabrous, black, transverse, somewhat narrower at base with sinuate lateral margins, disc finely and sparsely punctate in center, deeply punctate at sides, deeply impressed by a transverse line, curved at the margins, and less deeply incised by a straight longitudinal line from apex nearly to base; elytral shoulders with short, sparse yellow hairs, epipleura fold entirely orange; elytral punctation more dense and sharp than that of the pronotum; abdominal pubescense dark brown; metasternum densely yellow tomentose; metasternal epimeron glabrous; metatrochanter spine large and divergent posteriorly.

Female genitalia: Coxite without terminal claw; proctiger lobe short and broad, with apical spatula broad; coxite not emarginate [see pl. IV, fig. 1, (2)].

This is the species which I incorrectly called *N. melsheimeri* Kirby in my revision. I now feel that what I was dealing with was not "*melsheimeri*" but this species. I have here raised it to specific rank. A further discussion of the synonymy of "*melsheimeri*" follows.

Nicrophorus investigator Zetterstedt

Nicrophorus investigator Zett., Act. Holm. p. 154, 1824.
Nicrophorus melsheimeri Kirby *in* Richardson, Fauna Bor.-Am., 4:97, 1837. [vide: Leconte, Proc. Acad. Nat. Sci., Phila., 25:326, 1873.]

The status of the type specimen of *N. melsheimeri* Kirby has been a matter of controversy for over a hundred years. I hope that my recent investigations have corrected several mistakes. The type is most surely *N. investigator* Zett. as decided by Leconte in 1873. Dr. H. E. Hinton of the British Museum (Natural History) has kindly examined the Kirby type and sent me notes which clearly show type is *N. investigator*.

Nicrophorus obscurus Kirby

Nicrophorus obscurus Kirby *in* Richardson, Fauna Bor.-Am., 4:97, 1837.
N. melsheimeri Lec. [nec Kirby] [vide: Lec., Ann. Mag. Nat. Hist., (4), 6:398, 1870.]

Nicrophorus sayi Laporte

Nicrophorus sayi Laporte, Hist. Nat., 2:1, 1840.
N. melsheimeri Lec. [nec Kirby] [vide: Lec., Ann. Mag. Nat. Hist., (4), 6:398, 1870.]

Leconte saw the type of *N. melsheimeri* Kirby in the British Museum (Natural History) and concluded that it was the same as *N. sayi* Laporte. Later, (1873) he changed his mind. Dr .Hinton assures me that the two are not the same.

Nicrophorus pustulatus Herschel

Nicrophorus pustulatus Hers., Illig. Mag. Fur Inskt., 6:271, 1807.
N. melsheimeri Horn [nec Kirby] [vide: Horn, Trans. Amer. Ent. Soc., 8:233, 1880.]

Nicrophorus germanicus Linné

Silpha germanicus (L.), Syst. Nat., 10:359, 1758.
Nicrophorus grandior Angell, Ent. News, 23:307, 1912. [vide: Hatch, Jn. N. Y. Ent. Soc., 35:355, 1927.]

Since the description of *N. grandior* Angell, Prof. M. H. Hatch (3) has concluded that the type is in reality a California specimen of *Nicrophorus germanicus* L. ab. *bipunctatus* Kraatz. However, Portevin (4) places this form in his key as an aberration of *N. defodiens* Mannh. Leech (5) places *N. defodiens* Mannh. as a melanic coastal form of *vespilloides* Hbst. Hatch (6) examined

the paratype of *N. grandior* Ang. and found it to be a "somewhat immature" specimen of *N. humator* Fab.

Nicrophorus vespilloides Herbst

Nicrophorus vespilloides Hbst. *in* Fuessly, Arch. Ins., 4:32, 1783.
Nicrophorus defodiens Mannh., Bull. Soc. Nat. Mosc., 19:513, 1846. [vide: Leech, Bull. Brook. Ent. Soc., 32:156, 1937.]
Nicrophorus defodiens ab. *grandior* in Portevin, Enc. Ent., 6:236, 1926. [here placed in synonymy.]
Nicrophorus defodiens ab. *conversator* Walker, Nat. Vancouver II, 320, 1866. [vide: Portevin, Bull. Mus. Hist. Nat., Paris, 293, 1924.]

Recently I have examined material collected at Vancouver, B.C., labelled *N. conservator* Wlk. from the Mank collection (now in the Cornell University collection) and find the female genitalia as well as other morphological characters agree in every respect with *N. vespilloides* Hbst., differing only in the color pattern of the elytra.

Nicrophorus humator (Gleditsch)

Silpha humator Gleditsch, Verm. phys. bot. Abh., 3:224, 1767.
Nicrophorus humator Goeze, Beytr, 2:190, 1777.
Nicrophorus humator Ol., Ent. 2: no. 10:8, 1790.
Nicrophorus humator Fab., Ent. Syst., 1:217, 192.
paratype *grandior* Ang., Ent. News, 23:307, 1912. [vide: Hatch, Jn. N. Y. Ent. Soc., 35:354, 1927.]

Thanatophilus quadripunctata Linné

This conspicuously marked Silphid is European. It was introduced into Massachusetts in 1925 as a predator on gypsy moth larvae (7), but apparently has not become established nor been collected in the Nearctic Region.

The female genitalia indicate that it is related to the subgenus *Oiceoptoma*. However, the stylus is terminal as are the members of the genus *Silpha*. I do not regard this as indicative of being a *Silpha* because the stylus is small, the general shape and appearance of the organ as a whole is that of *Oiceoptoma* and not *Silpha*. I rather think of it as a convergence. The external characters are those of *Thanatophilus*, subgenus *Oiceoptoma*. By comparing slides of species of *Thanatophilus* and *Silpha* the differences are much more apparent than can be shown in a two-dimensional line drawing.

SPECIES GROUPS IN NICROPHORUS

Many attempts have been made to divide *Nicrophorus* into a number of species groups. The shape of the pronotum is generally the criterion used for such groups. As long ago as 1880 (8), Horn stated, "There has always seemed to be great trouble in properly defining the species [of *Nicrophorus*] ....." and offers a classification based on the shape of the pronotum and of the hind tibiae. A "species group" is generally formed by splitting a large genus into groups of presumably closely related species so that the genus can be more conveniently studied. But too often these groups are based merely on the arbitrary unnatural characters in the couplets or dichotomies of a key, and the groups are named for whatever species an author considers typical of a group. Moreover, as in all taxonomic categories, the extent and composition of these groups are a matter of opinions. Some investigators accord subgeneric rank to each of these "species groups"; others who have no wish to see proposed many names which will only disappear eventually into synonymy when the complex is better known, retain these groups as mere "species groups".

Nicrophorus, in my estimation, is divisible into two subgenera: *Necrocharis* Portevin of which *N. carolinus* Fab. is typical, and *Nicrophorus* in the restricted sense, of which *N. vespillio* (L.) may be regarded as typical. Any further splitting of the genus at our present state of knowledge can only be interpreted as arbitrary and artificial. Of course, it may be done for matters of convenience, but there is little to be gained by applying names to each individual group.

However, it is not so much the naming as the composition of the groups which interests me here. Our present state of knowledge of *Nicrophorus* is still

so incomplete and unsatisfactory that it is extremely difficult to make with any degree of certainty any statements or generalizations on the relationships of the species within the genus. Consequently, to resort to the practice of erecting species groups in *Nicrophorus* is a difficult and hazardous undertaking; for these assemblages are bound to be not only small in their composition but also very many in number. When more characters are discovered which will better define the species, and the distribution and range of these are more fully known, then and only then will it be profitable to establish "species groups" which may lay claim to any degree of validity. At the present juncture, I do not believe anything is gained by the present wholesale practice of splitting *Nicrophorus* into innumerable species groups of doubtful validity.

FORM AND SCULPTURING OF THE ELYTRA OF SILPHINI

The form and sculpturing of the elytra of the Silphini do not show relationships between the species. A superficial resemblance of the elytra of one species to the elytra of another species does not indicate that the two forms belong to the same subgenus, or even to the same genus. For instance, *Thanatophilus* (*Oiceoptoma*) *americana* (L.) and *T.* (*Thanatophilus*) *lapponica* Hbst. both have rugose elytra and somewhat resemble each other, yet they belong to different subgenera which are readily distinguished. The former has the labrum narrowly emarginate while the latter has the labrum very broadly emarginate. Thus we have two definite morphological characters to separate the two, which in consideration of other similar examples in other species, seems of more prime importance than the sculpturing of the elytra. Then turning to the characters offered in the female genitalia we find supporting characters in the shape and position of the stylus.

THE TERMS "EPIPLEURA FOLD" AND "HYPOMERA"

There is some confusion over the use of the terms epipleura and hypomera in describing Silphids.

The definition of "epipleura" on p. 92 of J. R. de la Torre-Bueno's *Glossary of Entomolgy*, is somewhat incorrect. He quotes Smith incorrectly in this manner:- "..... as generally used, the term [epipleura] is correctly applied to the entire bent-under margin of the elytra". The word "correctly" should read "incorrectly". This then agrees with the main part of the definition of epipleura as being the deflexed or inflexed portions of the elytra immediately beneath the edge.

The term hypomera applies to the raised *lower* margin of the epipleura.

Therefore, neither the term epipleura, nor hypomera may be applied to the bent edge of the elytra of Silphids as many authors, including the writer, have used them.

Horn (8) says, "the elytra have at the sides a marginal line ..... The part below this line is called ..... the 'epipleural fold', and is spoken of by most authors as the epipleuron but such is not the case, the epipleurae being extremely narrow pieces along the extreme edge of the elytra."

Thus the term epipleural fold must be substituted for "epipleura" and dorsal ridge of the epipleural fold for "hypomera" as applied to those portions of the elytra in the Silphidae.

A CORRECTION

Plate III, fig. 6, *Nicrophorus germanicus* L. of my paper (2) is incorrectly drawn. The lobe of the claw of the valvifer has a small patch of setae on the outer margin as stated in the key on page 12. Also there should be a dotted line shown connecting the membrane to the chitin between the spatula and the coxite. These were omittted when the drawing was made. Ackowledgements:- I wish to thank Dr. H. E. Hinton of the British Museum (Natural History) for his kindness in studying and sending me notes on the type of *N. melsheimeri* Kirby. Also I wish to thank: Mr. R. Q. Bliss, Philadelphia, Pa., for calling to my attention the misuse of the terms "epipleura" and "hypomera"; Mr. V. S. L. Pate of Cornell University for his help in preparing the manuscript.

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NEW DESCRIPTIONS OF LARVAE OF FOREST INSECTS: SEMIOTHISA, DYSMIGIA (LEPIDOPTERA, GEOMETRIDAE*)

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Some geometrid larvae exhibit dimorphism in colour. Several interesting observations of this phenomenon were made during the study of larvae of the species, *Semiothisa sexmaculata* Pack., *Dysmigia loricaria* Evers., and *Nepytia canosaria* Wlk.

In these observations, certain points stand out. Although larvae of *S. sexmaculata* are always green until they reach the last instar, both brown and green phases occur in that stage. After the last larval moult, a transition period of approximately two days is required for larvae to acquire the colouring of the brown phase. On the other hand, specimens of *D. loricaria* may pass their entire larval period in either a brown or a green phase (as do the larvae of *N. canosaria*, descriptions of which may be found in Can. Ent. 75:186-189) or they may change (as do some larvae of *S. sexmaculata*) from the green phase to the brown phase in the last larval instar. For *Dysmigia* larvae to undergo this transformation, approximately three days are required.

The writer would like to draw attention to a change in the method of presenting this contribution to the series, 'New Descriptions of Larvae of Forest Insects'. Larval descriptions of the ultimate instars in this paper are based on notes made from the study of a single larva; variations in colour pattern exhibited by other larvae of the same phase follow. It is felt that this is an improvement over the old system whereby a composite description was developed from the study of a number of larvae.

Semiothisa sexmaculata Pack.

Second Instar: Head with, as determined by the measurement of cast head capsules, 0.37 to 0.43 mm. Body 2.5 to 3.5 mm. in length and 0.4 mm. in width. Middorsal line green, flanked by a fine light line; addorsal line green. Subdorsal line fine, pale, bordered by a green supraspiracular line. Spiracular line pale. Venter pale green. Head light brown.

Third Instar: Head capsule width 0.56 to 0.65 mm. Body 4.0 to 6.0 in length and 0.4 to 0.5 mm. in width. Lines of colour much the same as in the last instar but these lines are more clearly defined particularly on the venter where the following lines are present: a fine white midventral line flanked by a grey-green line, contiguous to which is a fine white line. The subspiracular line, which comes next, is grey-green.

Fourth Instar: Head capsule width 0.86 to 1.03 mm. Body 7.0 to 10.0 mm. in length and 0.7 to 0.8 mm. in width. Ground colour of body green. Middorsal line grey-green; subdorsal line white, edged laterally with black. Supraspiracular line green, spiracular line yellowish-white and subspiracular line green. A white line follows the latter and in turn is flanked by a grey-green line. This

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line is separated from the grey-green midventral line by a light line. Head light russet.

Green Phase

Fifth Instar: (Description of one larva in the Forest Insect Survey sample: Record number '42 Ottawa 7308, collected by H. S. Fleming and S. G. Iserhoff at White River, Ontario, on tamarack). Head width 1.44 mm. Body 15 mm. in length and 1.5 mm. in width. Integument of body densely and finely granulate. Ground colour of body green. Middorsal line green, bordered by a fine white line; addorsal line green; subdorsal line white flanked laterally by a green line heavily stippled with black. Supraspiracular line green. Spiracular line yellowish-white, subspiracular line green flanked by a fine white line, then a green subventral line, followed by another fine white line and then a green midventral line. Covering of head finely granulate, rugulose. Head green in colour with a brownish tinge; ocellar area pale. Frons green; labrum reddish-brown, deeply cleft with apex of notch rounded. Prothoracic shield concolorous with dorsum; anal shield green with white subdorsal line continued across it to seta alpha and out to edge of shield between setae kappa and rho. Setigerous tubercles are brown papillae set directly on the integument; setae long, brown, pointed. Spiracles oblong-elliptical in shape with light brown centres and brown rims. Thoracic legs and prolegs green.

Size and colour deviations from this green phase larva of Rec. No. '42 Ottawa 7308, as determined by a study of more than twenty larvae, are as follows: head width 1.40 to 1.78 mm., body 13 to 18 mm. in length and 1.3 to 2.0 mm. in width. Epicranial index 1.0 to 1.1. Crochets of ventral proleg number 20 to 22. The colour of the line ventrad of the white subdorsal line may vary from green through reddish-brown to black. The head may have reddish-brown herring-bone markings over the vertices.

Brown Phase

Fifth Instar: (Description of one larva in the Forest Insect Survey sample of Record Number '42 Ottawa 7308, collected by H. S. Fleming and S. G. Iserhoff at White River, Ontario, on tamarack). Head width 1.20 mm. Body 10 mm. in length and 1.0 mm. in width. Integument of body densely and finely granulate. Ground colour of body dirty white. Middorsal line geminate dark grey to brown, the divided line connected on anterior end of each segment by a bar of the same colour; on the thoracic and first four abdominal segments there is also a median transverse bar. Addorsal line geminate, grey and very fine. Subdorsal line white, broken into a series of dashes by the dark obliques which run down from the addorsal line to the spiracular line. Laterad of the subdorsal line is a dark grey line; between this and the spiracular line is a geminate grey line in a pale grey supraspiracular stripe. Spiracular line grey with dark grey patches posterior to the spiracles; from these patches, dark grey obliques run dorsally and anteriorly to the addorsal line. Below the spiracular line is a grey line, followed by a light line on which are setae sigma and tau; then there is a geminate grey line, which is separated from the geminate midventral line by a light line. Covering of head finely granulate, rugulose. Ground colour of head grey. Markings on head dark grey or purplish-grey suggesting a herring-bone pattern over the vertices: along the epicranial stem and the occipital border is a solid brown band. Remainder of head with brown spots; from the spiracular line on the prothorax to the base of the antenna is a light streak. Ocellar area pale. The pale grey frons has a brown bar near the apex. Labrum light brown; notch as in the green form. Prothoracic shield concolorous with dorsum; anal shield dirty white with grey pits and small markings. Setigerous tubercles are brown papillae, set directly on the integument, in small, somewhat circular, brown patches. Setae and spiracles as in the green phase larva. Thoracic legs hyaline with a brown spot at distal end of each segment. Ventral proleg pale grey; anal proleg the same with dark markings on it.

The size and colour deviations from this specimen as determined by a study of ten larvae are: head width 1.20 to 1.62 mm.; body 10 to 16 mm. in length and 1.0 to 2.0 mm. in width. Epicranial index 0.9 to 1.0. Crochets of ventral proleg number 20 to 22. To the naked eye many of these larvae appear to be purplish-brown instead of brown. The subdorsal line may be pale brown instead of white. The dark grey line laterad of the subdorsal line is sometimes black. Spiracular line may be grey or yellow. Ground colour of head may be pale green.

Mouthparts: Mandibles differ in colour; those of the green phase are light brown and those of the brown phase are chocolate brown except for a light brown band along the distal edge, including the teeth; in shape these resemble the mandibles of *S. granitata* (Can. Ent. 75:134-136). Each mandible bears three ridges and nine teeth. Hypopharynx of usual type; spinneret is slender, conical and pointed at tip; labial palpi with segments in the proportion of 2.0 to 2.3, 1, 2.3 to 3.0.

Food plants: Larch

The green phase of this larva may be separated from the larva of *Semiothisa granitata* Gn. by the absence of the dark grey subventral line in *S. sexmaculata*. Since, so far as the writer knows, *S. granitata* has no brown form larvae, there will be no confusion of these species in that phase.

Dysmigia loricaria Evers.

Green Phase

Fourth Instar: (Description of one larva in the Forest Insect Survey sample of Record Number '45 Winnipeg 27X, collected by R. R. Lejeune and W. Durnin from trembling aspen in the Spruce Woods Forest Reserve, Manitoba, on May 30, 1945. This larva pupated on June 23 and emerged July 12 as a female moth). Head width 1.13 mm. Body 12 mm. in length and 1.2 mm. in width. Ground colour of body green. Middorsal line green, flanked by a white line. A fine green line bears setae alpha; then there is a fine white line bearing setae beta. This is followd by a broad green stripe in which is a greenish-white line, passing just above setae rho. Spiracular line greenish-white. Venter green with a pale midventral line. Intersegmental areas of abdomen yellowish. Covering the head are fine, convex granules. Head whitish-green in colour with no markings. Frons whitish-green; labrum brown. Prothoracic shield concolorous with dorsum; anal shield green edged with yellow. Setigerous tubercles are brown papillae set directly on the integument; setae long, light brown, pointed. Spiracles have light brown centres and brown rims. Thoracic legs green, hyaline proximally; prolegs green, with spiracular line running down along the anal one.

Fifth Instar: Head width 1.75 mm. Body 16 mm. in length and 1.5 mm. in width. Much the same as in the preceding description but the head is pea green. Clypeus green, dusky at apex.

Size and colour deviations from those set down above for the larva of Rec. No. '45 W 27X as determined by a study of five larvae are given herewith. Head widths of fifth instar larvae 1.75 to 2.3 mm. Body 16 to 25 mm. in length and 1.5 to 2.2 mm. in width. Spiracular line greenish-white, yellowish-green or green. The suggestion of a dark herring-bone pattern may appear on the vertices of the head. Epicranial index 1.1 to 1.3. The ventral proleg may bear from 24 to 26 crochets.

Brown Phase

Second Instar: (Description of one larva in the Forest Insect Survey sample of Record Number '45 Winnipeg 27 collected by R. R. Lejeune and W. Durnin from trembling aspen in the Spruce Woods Forest Reserve, Manitoba, on May 30, 1945. This larva pupated on June 19 and emerged as a male moth on July 5). Head width as determined by the measurement of cast head capsule 0.54 mm.

Third Instar: Head capsule width 0.79 mm. Body 7.0 mm. in length and 0.7 mm. in width. Ground colour pale cream. Middorsal line ground colour, flanked by fine brown lines. Addorsal and subdorsal lines much like the middorsal. Spiracular line ground colour, continued on to anal shield. Between and running parallel to the spiracular line and the light midventral stripe are fine brown lines. Head light brown with no markings.

Fourth Instar: Head capsule width 1.19 mm. Body 10 mm. in length. Pattern much the same as in the previous instars but with more reddish suffusion in the brown colour. Head light brown.

Fifth Instar: Head width 1.9 mm. Body 23 mm. in length and 2.0 mm. in width. Integument of body densely covered with small, convex granules. Ground colour of body pink. Middorsal line ground colour with fine, rosy brown line flanking it. Then there is a fine rosy brown line bearing setae alpha; then a light line followed by another fine rosy brown line bearing setae beta. Three more lines of the same colour are found between the setae beta and the spiracular line. Spiracular line yellow in the following sections: the posterior third of the metathoracic segment, on the anterior and posterior thirds of abdominal segments 1 to 4 inclusive and on the anterior third of the fifth abdominal segment. The spiracles lie in black patches, directed ventrally and posteriorly on abdominal segments two to five inclusive. These patches become longer in each succeeding segment until, in the fifth, they form an almost complete band across the dorsum; this band surrounds setae alpha. Posterior to these dark oblique patches on the anterior abdominal segments, the ground colour of the body may be seen. Subspiracular area yellowish. Midventral line is a pale stripe separated from the subspiracular area by a rosy or purplish area with transverse brown lines. Covering the head are fine, convex granules. Head brown in colour with darker brown spots. Frons brown; epicranial index 1.3. Labrum light brown. Prothoracic shield conclorous with dorsum; anal shield rosy with light marbling; a light band crosses it near anterior edge. Setigerous tubercles are brown papillae set directly on the integument; setae long, light brown, pointed. Spiracles have light brown centres and brown rims. Thoracic legs and abdominal prolegs rosy in colour.

Size and colour deviations from those set down for the larva of Rec. No. '45 W 27 as determined by a study of ten larvae are placed here for three instars. *Third Instar*: Head capsule width 0.76 to 0.81 mm. *Fourth Instar*: Head capsule widths 1.18 to 1.19 mm. *Fifth Instar*: Head capsule and head widths 1.73 to 2.07 mm. Body 15 to 23 mm. in length and 1.8 to 2.0 mm. in width. Each ventral proleg bears 24 to 26 crochets. *Mouthparts*: Mandibles light brown with three ridges and nine teeth. In shape, these are much like the mandibles of *Semiothisa granitata*. Hypopharynx of the usual type; spinneret stout, conical; labial palpi with segments in the proportion of 2.3, 1, 3.

Food plants: Poplar and willow.

Mature larvae of the genus *Dysmigia* (*loricaria*) resemble, to some extent, those of the genus *Semiothisa* (*sexmaculata* and *granitata*); specimens of *loricaria* will run out to *Semiothisa* in the key found in the Canadian Entomologist Vol. 78, pp. 160-162. Brown larvae of *Dysmigia* have an immaculate frons and no indication of herring-bone markings on the vertices while brown larvae of *Semiothisa* (*sexmaculata*) have a brown bar at the apex of the frons and always some herring-bone markings on the vertices. Green larvae of *Dysmigia* have no dark markings on the body and very few, if any, at the apex of the frons. Green larvae of *Semiothisa* (*sexmaculata* and *granitata*) have at least a little dark marking on the body and usually a little dark herring-bone pattern on the head. In Canada, under natural conditions, the larvae of the two genera discussed may be readily separated either by time of occurrence or by food-plant preference; those of *Dysmigia* are found from late May until the end of the first week in July on willow and poplar and those of *Semiothisa* from the first of July until early October on coniferous trees.

ADDITIONAL NOTES ON COLEOPTERA TAKEN IN ESSEX COUNTY AND SOUTHERN ONTARIO*

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The following list of specimens is supplementary to two previously published articles (1944, Canad. Ent. 76:163 and 1945, Canad. Ent. 77:214) on Essex County material. Appended to the list are miscellaneous records of 17 species captured in Ontario locations other than Essex County. These have been added to this paper since they are thought to be of noteworthy interest. The species in each part follow as closely as possible C. W. Leng's Catalogue of the Coleoptera of America north of Mexico.

Some of the identifications are based on the advice of Mr. W. J. Brown, Division of Entomology, Ottawa, who has always been helpful. The bulk of the material has been examined and named by Dr. J. N. Knull and Mr. J. A. Wilcox of the Ohio State University, Columbus, Ohio, to whom I am indebted for excellent co-operation. Specimens of all the beetles are contained in my collection.

It is hoped that this, the third list, will be useful in adding to the knowledge of the Coleoptera known to occur recently in Southern Ontario.

RECORDS FROM ESSEX COUNTY

Cicindela scutellaris lecontei Hald.—this species was frequently observed among other species of tiger beetles on a sandy spot near Roseland.

Photinus scintillans Say—this is the firefly whose light is most frequently seen in Windsor on late June evenings. In St. Catharines, 250 miles east of Windsor, *Photinus marginellus* is the most common night-lighter.

Agrilus frosti Knull—one specimen was taken at Roseland on June 2.

Taphrocerus nicolayi Obenh.—specimens were easily taken by sweeping herbage at Roseland.

Nosodendron unicolor Say—one specimen was taken beneath the bark of an old rotten stump at Roseland.

Atomaria patens Csy. (?)—tentatively identified through the interest of Mr. T. Daggy, Olivet College, Michigan. Many specimens were found inhabiting several *Coprinus comatus* growing on a rich compost heap in Windsor. If this should prove to be another or an undescribed species, it will be recorded again.

Hippodamia glacialis Fab.—several specimens were taken by sweeping and from the flowers of *Asclepias* sp.

Amphicerus hamatus Fab.—two specimens of this Apple Twig-borer were taken from within the stems of young hickory suckers which had died and hardened at LaSalle.

Pleurophorus batesi Arrow—one specimen was taken at Ojibway on June 4.

Callidium frigidum Csy.—a specimen was found floating in a wash tub at Olinda.

Calloides nobilis Harris—taken at Ojibway by a Windsor collector, the late M. J. Staddon, on June 15th.

Hippopsis lemniscata Fab.—one specimen was swept from among *Ambrosia artemisiifolia* plants in a Windsor city alley by my seven-year-old son, Gary Hicks.

Oberea umbra Csy.—a specimen was swept up at Roseland.

Pachybrachys relictus Fall—this species was taken by sweeping at Roseland in June

Pachybrachys obsoletus Suffr.—several specimens were observed on *Salix* sp. at Belle River in May.

Pachybrachys calcaratus Fall—specimens were taken at Roseland in June.

Contribution No. 60 from the Plant Protection Division, Science Service, Department of Agriculture, Ottawa, Ontario.

Cryptocephalus leucolemas Suffr.—one specimen was collected in a Japanese beetle trap at LaSalle.

Cryptocephalus trivittatus Oliv.—one specimen was taken by sweeping at Roseland.

Bassareus mammifer luteipennis Melsh.—one specimen was collected by W. R. Lapp at Ojibway.

Bassareus lituratus Fab.—this species occurs with the variety *lativittis* at Roseland in June.

Nodonota tristis Oliv.—several specimens were swept from low-growing herbs at Roseland.

Rhabdopterus deceptor Barber—taken from some low-growing succulents in moist woods at Ojibway in July. The male genitalia have good characters which separate this species from *R. praetextus* Say of which specimens have been taken at Vineland in the Niagara Peninsula.

Calligrapha rhoda Knab—six specimens were swept from *Corylus americana* between May 30 and June 2. Taken at the same time from hazel were two specimens having pale margins on the thorax but with all the other essential characters of *rhoda*. Mr. W. J. Brown feels sure that these are *rhoda*, although he has seen no variant like them.

Galerucella decora Say—can be readily taken on *Salix* sp. at Roseland and Ojibway.

Galerucella alni Fall—two specimens were taken by sweeping at Objibway.

Oedionychis subvittata Horn—taken at Roselawn in June.

Disonycha procera Csy.—a common species easily taken on *Polygonum* sp. at Amherstburg.

Chalcoides fulvicornis nana Say—this variety was taken on *Salix* sp. It is common and varies to some degree in size and colour.

Chaetocnema protensa Lec.—taken at Roseland in June.

Chaetocnema minuta Melsh.—this species was taken at Roseland.

Chaetocnema confinis Crotch.—a specimen of this Sweet Potato Flea Beetle was collected at Roseland.

Spermophagus hoffmannseggi Gyll.—a specimen of this weevil was taken at Ojibway on August 15 by the late M. J. Staddon, Windsor.

Ithycerus noveboracensis Forst.—the New York weevil, known to be injurious in fruit-growing areas, was commonly observed at Ojibway on the trunks of *Quercus* sp. in June.

Attelabus pubescens Say—a few specimens taken by sweeping *Corylus americana* at LaSalle.

RECORDS FROM OTHER COUNTIES OF SOUTHERN ONTARIO

Myas foveatus Lec.—one specimen was taken on August 3, 1939, at DeCew Falls in a ground bait trap.

Enoclerus nigripes rufiventris Say—two specimens were collected by Mr. H. R. Boyce at Vineland on August 30, 1941.

Phyllobaenus humeralis difficilis Lec.—four specimens were collected at Point Pelee and DeCew Falls.

Phyllobaenus lecontei Wolc.—one specimen was taken at DeCew Falls on May 24, 1940.

Isorhipis obliqua Say—many specimens taken on a beech log at DeCew Falls on June 20, 1939.

Agrilus bilineatus carpini Knull—one specimen taken at St. Catharines on July 4, 1940.

Agrilus defectus Lec.—one specimen collected at Fonthill on May 31, 1941.

Agrilus crataegi Frost—three specimens collected at Queenston, Grimsby, and Dunnville in 1939.

Agrilus vittaticollis Rand—one specimen collected at DeCew Falls on June 16, 1937.

Agrilus juglandis Knull—one specimen collected at Dunnville on July 20, 1939.

Cytilus alternatus Say—a species which appears to be established throughout the Niagara Peninsula having been taken at Hamilton, St. Catharines, and Niagara Falls.

Pachybrachys cephalicus parvus Fall—taken at Campden in July.

Galerucella tuberculata Say—specimens were taken on *Salix* sp. at Muldrew Lake in Haliburton County, the vicinity of Toronto, and at Turkey Point.

Systena blanda Melsh—taken at Campden in July.

Cleonus plumbeus Lec.—one specimen was taken at Ridgeville, in June, 1935. It would appear that this is an extreme southern record for eastern North America. It is recoded from southern Colorado and New Mexico in the west.

Lixus terminalis Lec.—a specimen was taken at Fonthill on May 26th, 1936.

Cleonus piger Scop.—this Europeon species was collected at St. Catharines by Mrs. G. Henderson in August, 1942. According to previously published records (Canad. Ent. 52:77, 1940) it is known to occur in America from the Ithaca region of New York State and at Cascapedia on the Gaspe coast of Quebec. In 1946, large numbers of these weevils were taken on its food-plant, Canada thistle, near Montreal. One specimen was also taken at Ottawa.

ACENTROPUS NIVEUS OLIVIER (LEPIDOPTERA:PYRALIDAE) AT HAMILTON, ONTARIO

The occurrence of the small moth, *Acentropus niveus* Olivier, in North America has been recorded by Forbes (1) and Sheppard (2). The former author collected a male specimen at Minetto, N. Y., and the latter captured three specimens at Montreal, Canada.

During the summer of 1947 this species has occurred frequently in collections made by the writer on the Dundas Marsh, Hamilton, Ontario. The first record of appearance is for June 14, 1947 (three specimens). These moths were found in cages set out on the marsh to capture insects emerging from the water. Up to the date of writing, July 19, 1947, about seventy-five specimens have been collected.

The moth was kindly identified by Dr. W. T. M. Forbes of Cornell University who has retained specimens for the Cornell University collection. All other specimens are in collection at McMaster University, Hamilton.

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FURTHER NORTH AMERICAN RECORDS OF *ACENTROPUS NIVEUS* (LEPIDOPTERA, PYRALIDAE)

Forbes (1938) recorded a single specimen of *Acentropus niveus* from Oswego, New York, and Sheppard (1945) recorded three specimens taken by him at Montreal, Quebec. These are the only published records from North America of this species, which is well known in Europe.

I took a male of *A. niveus* at light at Varna, Tompkins Co., New York on June 15, 1946, and this year was fortunate enough to get two further specimens, one at light at Lac a la Tortue, near Grand'Mere, in Champlain Co., Quebec, and one found dead in my laboratory at Ste. Anne de Bellevue, Jacques Cartier Co., Quebec, both in the last week of July. The Ste. Anne de Bellevue specimen was a winged female; the other two were males. All were of the sharp-winged form mentioned by Forbes. The Varna specimen was compared with a European male of the round-winged form in the Cornell University collection. Except for the difference in wing form, the two specimens were identical, and an examination of the genitalia *in situ* failed to reveal any significant difference.

The extremes of the known American range are nearly four hundred miles apart, and this fact, together with the repeated capture of the species, raises the question of whether *A. niveus* may not be a native American species, rather than an introduction from Europe, as hitherto supposed. The adult lacks functional mouth parts, and is probably very short lived, while the early stages are entirely aquatic. Introduction by ship is thus very unlikely, while the species is known to have been established on this continent before the advent of transatlantic air transport. Sheppard points out that the moth is easily overlooked by the Lepidopterist, owing to its small size, dull colouring, and general resemblance to a caddis fly. From my own experience, I can add that it might easily be missed, even by a collector familiar with its appearance. The two males that I have seen alive both behaved in the same way: immediately on arrival at the light, they dropped to the ground, where they fluttered weakly, or rested with the wings partially extended; in the latter position they were most inconspicuous, owing to the approximation of the colour of the wings to that of weathered wood. The resting position is very similar to that of the much more abundant species of *Cataclysta*, and I actually mistook the dead female at first glance for a badly worn specimen of *Cataclysta*.

I believe, therefore, that this species is more abundant and possibly much more widely distributed in North America than the few records of its capture which have so far been published would suggest, but that it has generally been overlooked owing to its inconspicuous and un-moth-like habitus, and to the fact that relatively few specimens appear at light, even where the species is of regular occurrence. Furthermore, I think it likely that the insect is a native American one, rather than a recent arrival from the Old Wold.

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